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Thomas Getgood

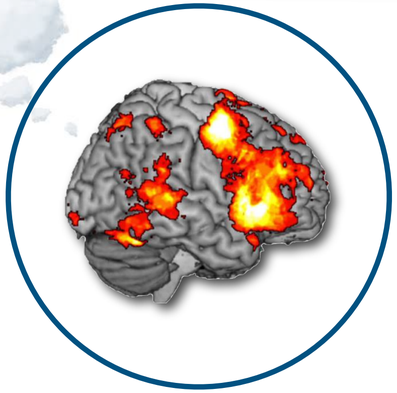
Henning Reimann

pitch /catch: wiki principle
power of a community working together
to make data /knowledge available

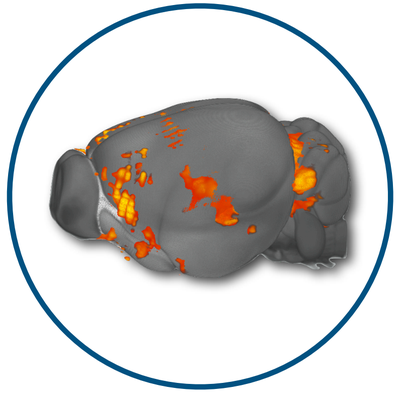
neural correlates of (un)consciousness?
loss of selfhood?
building blocks of self and consciousness?

anesthesiology
/pain management

balanced multimodal anesthesia
- what is the best combination?
- what the most suitable dosis?
- what is min /max anesthetic depth required?



cognitive research



basic research

novel anesthetic strategies:
calm relaxed sedated animal
but: fully functional brain

best combination and dose for
- sensory perception?
- functional connectivity?
- optogenetic modulation?
- nociception?

complex topic

multimodal cross-actions

very basic understanding

contradictory results

vast body of literature (review)

comprehensive database

- ○ all species
  - ◉ humans
  - ○ monkeys
  - ○ rats
  - ◉ mice

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specific term

go!

species | modalities | applications | anesthetic | depth | physiology | sort by

- all species
  - humans
  - monkeys
  - rats
  - mice

- all scales
  - neuron level
  - ensemble (LFP)
  - cortex (EEG)
  - large-scale (fMRI)

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specific term go!

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- all sensory stimuli
  - visual
  - auditory
  - olfactory
  - somatosensory
  - nociceptive
- resting state
- all brain stimulation
  - deep brain
  - optogentics
  - chemogenetics

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specific term go!

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  - optogentics
  - chemogenetics
- all anesthesia
  - monoanesthesia
  - multimodal combinations
  - all GABAergic
    - propofol
    - editomidate
    - benzodiazepines
    - barbitol
  - all volatile ethers
    - isoflurane
    - sevoflurane
  - all α2 AR agonists
    - (dex)medetomidine
    - xylazine
  - all NMDA antagonists
    - ketamine
- all sleep stages
  - N1
  - N2
  - N3
  - REM
- coma

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  - N2
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  - REM
- coma

depth
- all depths
  - light (prior to LoBR)
  - moderate (LoBR-LoCC)
  - deep (after LoCC)

physiology

sort by

openmind.org

specific term go!

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- coma

depth
- all depths
  - light
  - moderate
  - deep

physiology
- all effects
  - blood pressure
  - heart rate
  - hemodynamics
  - breathing rate
  - other effects

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physiology

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sort by

- publication date
- relevance (citations)
- relevance (rating)
- original work
- synopsis tag
- lab reports

Medetomidine has no dose-dependent effect on the BOLD response to subcutaneous electrostimulation (0.5, 0.7, 1 mA) in mice for doses of 0.1, 0.3, 0.7, 1.0, 2.0 mg/kg/h.

comments history related details tags figure Nasrallah et al., 2012

Medetomidine has been shown to promote vasoconstriction in rats measured by decrease in central arterial diameter.

comments history related details tags figure Another et al., 1996

BOLD responses under medetomidine are attenuated and onset is delayed in mechanically ventilated mice.

comments history related details tags figure Schroeter et al., 2014

Medetomidine has no dose-dependent effect on the BOLD response to subcutaneous electrostimulation (0.5, 0.7, 1 mA) in mice for doses of 0.1, 0.3, 0.7, 1.0, 2.0 mg/kg/h.

comments history related details tags figure Nasrallah et al., 2012

No physiological parameters were monitored.

Reimann HM. 2019/05/28

Could be due to hypercapnia. Spontaneous breathing animals.

Brown EM. 2019/05/13

→ dynamic discussion

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comments history related details tags figure Nasrallah et al., 2012

This is in contrast to Schroeter et al., 2014 I ▸

Has been confirmed by Adamczack et al., 2010 I ▸

This is related to Weber et al., 2006 I ▸
Solt et al., 2016 I ▸
Schlegel et al., 2015 I ▸

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comments history related details tags figure Nasrallah et al., 2012

Technical: 9.4T, cryoprobe, GRE-EPI
Processing: SPM, GLM
Subjects: C57BL/6N mice, male
Setup: spontaneous breathing, no physiol. monitoring

Medetomidine has no dose-dependent effect on the BOLD response to subcutaneous electrostimulation (0.5, 0.7, 1 mA) in mice for doses of 0.1, 0.3, 0.7, 1.0, 2.0 mg/kg/h.

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mice, fMRI, somatosensory, medetomidine, light, moderate, deep anesthesia

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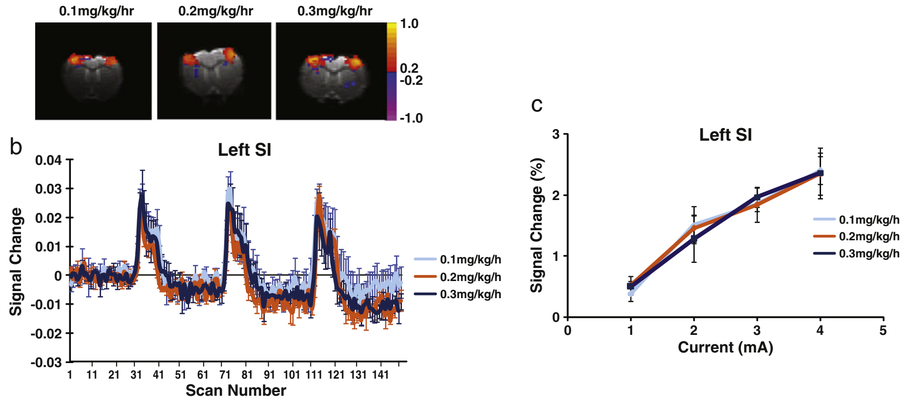

Fig.1 – brief figure caption

Medetomidine has no dose-dependent effect on the BOLD response to subcutaneous electrostimulation (0.5, 0.7, 1 mA) in mice for doses of 0.1, 0.3, 0.7, 1.0, 2.0 mg/kg/h.

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Pharmacological modulation of functional connectivity: α2-adrenergic receptor agonist alters synchrony but not neural activation

Nasrallah F, Tan J, Chuang K

NeuroImage

Correlative low frequency fluctuations in functional MRI (fMRI) signals across brain regions at rest have been taken as a measure of functional connectivity to map large-scale neural networks; however, the neural origin is still not clear. Receptor-targeted pharmacological manipulation could elucidate the role of neuroreceptor systems in resting-state functional connectivity to provide another perspective on the mechanism. In this study, the dose-dependent effects of an α2-adrenergic receptor agonist, medetomidine, on brain activation and functional connectivity were investigated. Forepaw stimulation-induced activation and resting-state fluc- tuation in the rat somatosensory cortices and caudate putamen were measured using the blood oxygenation level dependent (BOLD) fMRI. The results showed significant dose-dependent suppression of inter- hemispheric correlation but not the amplitude in the somatosensory areas, while the stimulation-induced acti- vation in the same areas remained unchanged. To clarify the potential change in the hemodynamic response caused by the vasoconstrictive effect of medetomidine, the resting perfusion fluctuation was studied by arterial spin labeling and showed similar results as the BOLD. This suggests that the oxygen metabolic rate and hence the neural activity may not be affected by medetomidine but only the synchrony between brain regions was sup- pressed. Furthermore, no change in functional connectivity with medetomidine dosages was seen in the caudate putamen, a region with much lower α2-receptor density. These results indicate that resting-state signal correla- tion may reflect underlying neuroreceptor activity and a potential role of the adrenergic system in the functional connectivity.

new extract /modify extract

extract: Medetomidine has no dose-dependent effect on the BOLD response to subcutaneous electrostimulation (0.5…

figure link: https://github.com/hlesaint/openmind/figures/nasrallah2012_figure1.png #open? #licence?

pubmed link: https://www.ncbi.nlm.nih.gov/pubmed/22209807 → gets title, authors, date, journal, abstract

comments: #whatever you think is important

confirmed by: #pubmed link [+]

in contrast to: #pubmed link [+]

related to: #pubmed link [+]

→ gets 1st author + date, proposes existing extracts to link to

details: #technical [+] e.g. 9.4T, SE-EPI | #processing [+] e.g. SPM, GLM | #subjects [+] e.g. Wistar rats, male | #monitoring [+] e.g. breathing rate, heart rate, arterial blood pressure

tags

species
[+] new
- ○ all species
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  - ○ rats
  - ◉ mice

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  - ○ hemodynamics
  - ○ breathing rate
  - ○ other effects

others
[+] new
- ○ original work
- ○ synopsis tag

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comments history related details tags figure 1 | 2 original extracts

Medetomidine has no dose-dependent effects on breathing and heart rate in mice for doses of 0.1, 0.6, 1.0 mg/kg/h.

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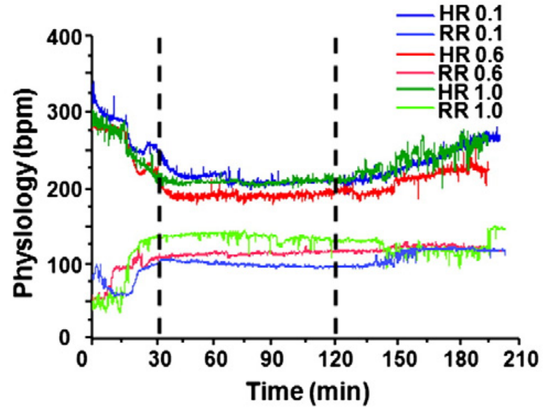

Fig.1 – brief figure caption

Medetomidine has no dose-dependent effects on breathing and heart rate in mice for doses of 0.1, 0.6, 1.0 mg/kg/h.

comments history related details tags figure Nasrallah et al., 2012

unpublished data

Nasrallah F, Tan J, Chuang K

Clinical Imaging Research Centre, National University of Singapore, Singapore

Here is sufficient place for additional information and experimental details.

Cui bono?

- anesthesiologists (required min /max anesthetic depth based on *multimodal* anesthesia)
- basic researchers (basic and preclinical research in the calm relaxed animal with functional brain)
- cognitive researchers (mind-brain-relation)

How to make it happen?

(1) developing basic infrastructure (make it easy to create new and comment on existing extracts)
(2) fill in contents for about 3 months (~200-300 extracts from ~150 articles)
(3) contact key researchers from selected universities
(4) open to public (registration from university account?)

Which online architecture do we use?

www.elastic.co

(Hopefully) online on Thursday…